RRB ALP CBT-II (Mechanic Diesel) Official Paper (Held On: 06 May, 2025 Shift 2) (Previous Year Paper)

RRB Assistant Loco Pilot (ALP) • 2025 • 175 questions • 150 minutes • Answer key

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PART A

Q1. A can complete a work in 14 hours, while B can do the same work in 21 hours. A started working alone. After how many hours should B join A so that the total work is completed in 10 hours?

(a) 3
(b) 4.5
(c) 3.5
(d) 4

Q2. Why is regular maintenance of HVAC systems considered a medium ECO?

(a) It decreases the system's energy consumption.
(b) It prevents overheating of the system.
(c) It increases the cost of energy.
(d) It speeds up system breakdowns.

Q3. The speed of a train is 144 km/hr. The distance covered by the train in 12 seconds is:

(a) 480 m
(b) 103 m
(c) 518 m
(d) 78 m

Q4. In a certain code language, 'GOES' is coded as '8624' and 'SNYC' is coded as '3817'.
What is the code for 'S' in the given code language?

(a) 8
(b) 4
(c) 3
(d) 2

Q5. In a certain code language, 'BOAT' is coded as '8654' and 'AIDS' is coded as '3517'.
What is the code for 'A' in the given code language?

(a) 6
(b) 5
(c) 3
(d) 8

Q6. The weights (in kg) of 20 students of a class have been recorded as 35, 42, 56, 44, 55, 44, 36, 44, 49, 48, 55, 35, 44, 47, 49, 48, 56, 44, 37 and 35. The modal weight (in kg) of the class is:

(a) 47
(b) 37
(c) 44
(d) 45

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Q7. Pipes A and B can fill a rectangular tank in 40 minutes and 120 minutes, respectively. Pipe C can empty the completely filled same tank in 240 minutes. If pipes A, B and C are opened at the same time, then how many minutes will it take to fill the tank?

(a) 342/8
(b) 342/7
(c) 322/7
(d) 343/7

Q8. Which of the following actions involves scientific work?

(a) Spending time conversing with friends
(b) Climbing up the stairs
(c) Watching a film
(d) Holding a large load on one's head while standing motionless

Q9. How is a voltmeter connected in a circuit to measure potential difference?

(a) In parallel across the points where potential difference is to be measured
(b) In series with the circuit
(c) Neither in series nor in parallel
(d) Directly to the power source only

Q10. Find the minimum value of $2x^2 - 5x - 3$ and also find x.

(a) • 6.125 and x = 1.25
(b) -6.125 and x = 0.25
(c) 6.125 and x = 1.25
(d) 6.125 and x = 1.2

Q11. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group? (Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) CGXF
(b) UYPW
(c) QULS
(d) JNEL

Q12. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

AD8, FI16, KN24, ?

(a) OS32
(b) OR35
(c) PS35
(d) PS32

Q13. Select the pair which follows the same pattern as that followed by the two sets of pairs given below. Both pairs follow the same pattern.

ARF: YTH

WVJ: UXL

(a) MEL: HZN
(b) SZN: QBP
(c) QEB: NBD
(d) KXF: HZH

Q14. By how much is 60% of 50 greater than 4/5 of 35?

(a) 2
(b) 3
(c) 4

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(d) 1

Q15. Which of the following is NOT an SI unit?

(a) Hour
(b) Metre
(c) Mole
(d) Kilogram

Q16. The speed of a bus is 6 metres/second. The distance (in kilometres) travelled by the bus in 8 hours and 20 minutes is:

(a) 185
(b) 180
(c) 184
(d) 175

Q17. Three partners, A, B and C, shared the profit in a business in the proportion of 11: 13: 16. They invested their capitals for 7 months, 5 months and 12 months, respectively. What was the ratio of their capitals?

(a) 165 :273 :140
(b) 96: 135: 101
(c) 3:5:8
(d) 21:35:44

Q18. T-Square is used to _____in engineering drawings.

(a) support the drawing paper/tracing paper for making drawings
(b) draw curved lines on drawing sheets
(c) draw horizontal lines, parallel lines and to guide/hold the setsquares
(d) transfer dimensions and dividing lines into a number of equal parts

Q19. Which of the following features is unique to Telegram compared to WhatsApp and Facebook Messenger?

(a) Voice and video calling capabilities
(b) End-to-end encryption for all messages
(c) Ability to create channels for broadcasting messages to large audiences
(d) Integration with Facebook for seamless sharing

Q20. Calculate the resistance of the bulb filament if it draws 200 mA current from 220 V source.

(a) 0Ω
(b) 1100 Ω
(c) 220 Ω
(d) 44 Ω

Q21. Which of the following processes causes accumulation of heavy metals such as lead and mercury in soil?

(a) Ozone layer depletion
(b) Improper disposal of industrial wastes
(c) Water evaporation
(d) Natural soil formation

Q22. What should come in place of the question mark (?) in the given series?

WU5, SQ7, NL11, ?

(a) GE17
(b) HF13
(c) GE13
(d) HE15

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Q23. Which of the following statements is correct?

(a) All metals are poor conductors of heat.
(b) Plastic and wood allow heat to pass through them easily.
(c) Dry air is a good conductor of heat.
(d) Copper and aluminium are good conductors of heat

Q24. If 24 joules of work is done in moving a charge of 2 coulombs across two points, then what will be the correct voltage across these two points?

(a) 2 V
(b) 12 V
(c) 24 V
(d) 48 V

Q25. The two sides CB and BA of triangle ABC are produced to CE and BD, respectively, in such a way that angle DAC = 110° ; and angle ABE = 130°. Which of the following options is true?

(a) AC <AB < BC
(b) BC <AC <AB
(c) AB <AC <BC
(d) BC <AB < AC

Q26. The marked price of an item is Rs. 27,500. The shopkeeper gave two successive discounts: the first discount was 20%, and the second was 30% of the first discount rate. What is the selling price of the item (in rupees)?

(a) 1,26,080
(b) 20,860
(c) 20,086
(d) 20,680

Q27. Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of:: is the same as that on the right side of ::?

#: KHM:: OLQ: %

(a) #LIN, % = NKO
(b) #LIN, % = NLP
(c) #LIN, %= NKP
(d) #LIM, % = NKP

Q28. Which of the following statements is INCORRECT?

(a) In solids, heat transfer is typically carried out through conduction.
(b) Burning of feet on hot sand is an example of heat transfer by conduction.
(c) Conduction is the process of heat transfer that does not require any medium to transfer heat
(d) Conduction is the process of heat transfer from hotter body to colder body.

Q29. A man rides a bicycle from Point A to Point B in 10 minutes and comes back to Point A along the same path in 10 minutes. If the distance between Points A and B is 1 km, calculate his average velocity?

(a) 3.3 m/s
(b) 1.6 m/s
(c) 0 m/s
(d) 0.1 m/s

Q30. What is the dimensional equation of mass density (p)?

(a) [ML-3T2]
(b) [M0 L^3 T0]
(c) [ML-3T0]
(d) [M L-2 T0]

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Q31. What is the kinetic energy possessed by an object having mass 25 kg and moving with a uniform velocity of 2 m s^{-1}?

(a) 80 J
(b) 50 J
(c) 120 J
(d) 100 J

Q32. What is the value of 100 g in Sl units?

(a) 1 kg
(b) 0.1 kg
(c) 100 kg
(d) 10 kg

Q33. A mass m is moving with a velocity v and its kinetic energy is K. What will be the new kinetic energy if the velocity is doubled?

(a) 2K
(b) K
(c) 4 K
(d) K/2

Q34. Which of the following is a main greenhouse gas that is responsible for global warming?

(a) Nitrogen
(b) Helium
(c) Carbon Dioxide
(d) Oxygen

Q35. Which of the following tools is commonly used to support the 'Standardize' step in the 5S methodology?

(a) Labels and signs
(b) Cleaning supplies
(c) Floor markings
(d) Job cycle charts

Q36. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) GMKT
(b) EKJR
(c) VBZI
(d) IOMV

Q37. What should come in place of the question mark (?) in the given alpha-numeric series?

Y13, F11, L9, Q7, U5, X3, ?

(a) 22
(b) A1
(c) Z1
(d) Y1

Q38. Given below are two sets of numbers. Both the sets are formed using the same mathematical equations or follow a common pattern. Which of the given options follows the same set of mathematical equations or patterns as the sets given in the question?

1333-1730-2199-2746-3377

218-345-514-731-1002

(a) 123 - 146 - 171 - 198 - 227
(b) 38 - 51 - 66 - 83 - 102
(c) 3-10-29-66-127
(d) 3 - 6 - 11 - 18 - 27

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Q39. Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number results in the second number. Similarly, certain mathematical operation(s) on the second number results in the third number and so on. Which of the given options follows the same set of operations as in the given sets?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13-Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

988-494-444-534; 894-447-397-487

(a) 138 - 69 - 14 - 98
(b) 226 - 113 - 144 - 268
(c) 586 - 293 - 244 - 328
(d) 682-341-291-381

Q40. What is the first step to take in case of a power failure in a workshop?

(a) Continue working as usual
(b) Check if emergency lighting and backup power are functional
(c) Panic and leave the premises immediately
(d) Ignore the situation and wait for power to return

Q41. Which of the following is an ethical concern related to Information Technology?

(a) Enhancement of communication channels
(b) Privacy violations and data breaches
(c) Reduction in administrative costs
(d) Increased accessibility to educational resources

Q42. Which term is used to describe the closeness of the measured value to the standard or true value?

(a) Mean
(b) Precision
(c) Approximate
(d) Accuracy

Q43. Which of the following is NOT correct about Joule's law of heating?

(a) Heat produced in a resistor is directly proportional to the square of the current for a given resistance.
(b) Heat produced in a resistor is directly proportional to the time for which the current flows through the resistor.
(c) Heat produced in a resistor is directly proportional to the resistance for a given current.
(d) Heat produced in a resistor is inversely proportional to the square of the current for a given resistance.

Q44. Which of the following terms is used to describe the pollutants that originate from identifiable sources, such as factories or vehicles?

(a) Non-point Source Pollution
(b) Random Pollution
(c) Point Source Pollution
(d) Radicle Pollution

Q45. How does installing energy-efficient windows in an old building affect energy consumption?

(a) It has no effect on fuel consumption.
(b) It causes indoor temperatures to rise.
(c) It reduces heating and cooling costs in the building.
(d) It increases the need for artificial lighting.

Q46. Which of the following is generally the temperature range in a laboratory thermometer?

(a) -10°C to 110°C
(b) -10°C to 150°C
(c) -100°C to 130°C
(d) 35°C to 42°C

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Q47. A refrigerator seller offers a discount of 10% on its listed price of Rs. 57,500 and still earns a profit of 15%. The cost price of the refrigerator is:

(a) Rs. 45,000
(b) Rs. 42,000
(c) Rs. 40,000
(d) Rs. 48,000

Q48. A person saves 50% of his income. If his expenditure is 440, then his income (in Rs.) is:

(a) 600
(b) 880
(c) 920
(d) 560

Q49. Which of the following is the correct statement of Ohm's Law?

(a) If the potential difference across the two ends of a conductor is 1 V and the current through it is 1A, then the resistance of the conductor is 20.
(b) The potential difference across the ends of a conductor is inversely proportional to the current flowing through it.
(c) The potential difference across the ends of a conductor is directly proportional to the current flowing through it.
(d) Current through a resistor is directly proportional to its resistance.

Q50. A shopkeeper sells sugar at 30 per kg, which he has bought at 24 per kg. Being dishonest, he also gives only y gm of sugar instead of 1000 gm that is mentioned on the weight. In this way, the shopkeeper manages to make an overall profit of 66 2/3 %. What is the value of y?

(a) 600
(b) 720
(c) 800
(d) 750

Q51. What is the SI unit for solid angle?

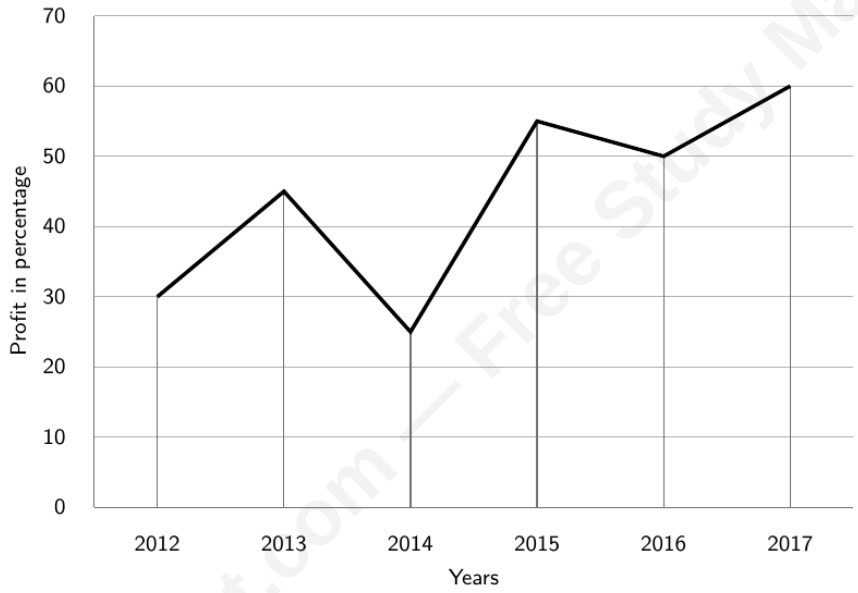
(a) Metre
(b) Candela
(c) Radian
(d) Steradian

Q52. Eight people are sitting in two parallel rows containing 4 people each in such a way that there is equal distance between adjacent persons. In row 1-A, B, C and D are seated and all of them are facing south. In row 2-P, Q, R and S are seated and all of them are facing north. Thus each person faces another person from the other row. No one sits to the left of B. R faces the person who sits second to the right of D. C faces the person who is the immediate neighbour of Q and R, B does not face S. Who amongst the following faces P?

(a) D
(b) A
(c) B
(d) C

Q53. Study the given graph and answer the question that follows.

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What is the average profit percentage of the given years?

(a) 44%
(b) 43.4%
(c) 44.1%
(d) 45%

Q54. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

I. All books are pencils.

II. All pencils are cardboards.

III. All cardboards are notebooks.

Conclusions:

I. Some notebooks are pencils.

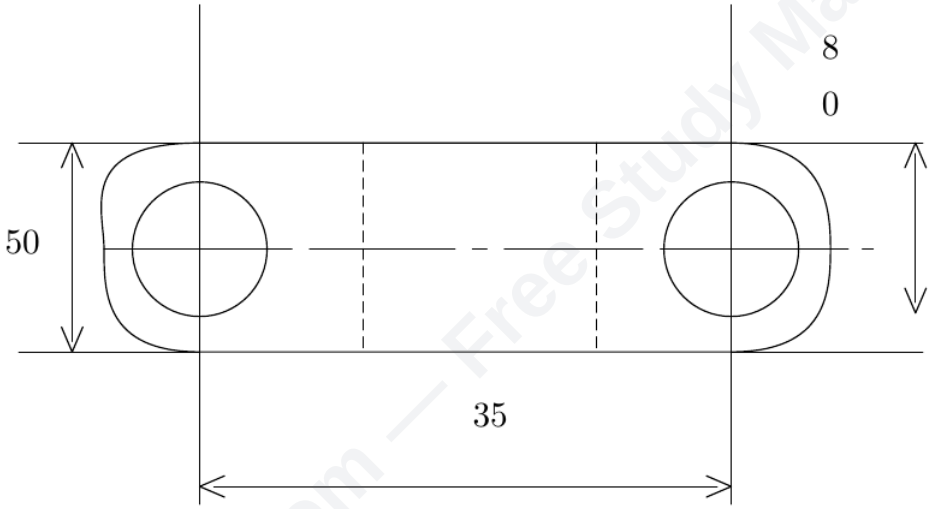
II. Some cardboards are books.

III. Some notebooks are books.

(a) Only conclusions I and II follow.
(b) All conclusions I, II and III follow
(c) Only conclusions I and III follow.
(d) Only conclusions II and III follow.

Q55. What type of view is represented of the given machine component?

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(a) Oblique view
(b) Orthographic view
(c) Perspective view
(d) Isometric view

Q56. In order to resolve disputes arising from cyber crime, such as tampering with computer source documents, hacking the computer system, using password of another person and publishing sensitive personal data of others without their consent, a forum has been established by the Central Government (India) in accordance with the provisions contained under Section 48(1) of the Information Technology Act, 2000. What is the name of that forum?

(a) Cyber Appellate Tribunal
(b) National Cybercrime Reporting Station
(c) Cybercrime Reporting Tribunal
(d) Internet Crime Complaint Center

Q57. When reporting a fire in an emergency, what is the most critical information to provide to emergency services?

(a) The weather conditions at the time of the fire
(b) How the fire started and if someone is injured or missing
(c) The likely cause of the fire and the building owner's name
(d) The colour of the smoke and the direction it is moving

Q58. Why does a combination of two thin blankets keep you warmer in the winter than a single thick blanket?

(a) Two thin blankets allow more heat to escape, keeping you warmer.
(b) Two blankets create an additional insulating layer of air, reducing heat loss
(c) Two thin blankets generate more heat than one thick blanket.
(d) Two thin blankets absorb more heat from the surroundings than one thick blanket.

Q59. What is necessary for a circuit to have electric current flowing through it?

(a) A closed conducting path with a voltage source
(b) Only wire
(c) Only switch
(d) Only bulb

Q60. Which of the following is NOT correct?

(a) An object moving with a constant velocity represents uniform motion.
(b) The motion of satellite around Earth in a circular orbit is uniform circular motion.
(c) A person jogging in the park is not an example of uniform circular motion.
(d) The distance-time graph of an object moving with uniform speed is not a straight line:

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Q61. Among three partners A, B and C in a business. The capital of B is equal to half the difference between thrice the capital of C and twice the capital of A. If at the end of the year, they received a profit of 25,415, what is the share of C (in)?

(a) 9,166
(b) 8,666
(c) 11,666
(d) 10,166

Q62. E, F, G, H, P, Q, and R, are sitting around a circular table facing the centre. F sits third to the left of H. Only two people sit between H and G when counted from the right of H. Q is an immediate neighbor of G. P is NOT an immediate neighbour of H. E is an Immediate neighbour of Q. Who sits second to the left of E?

(a) H
(b) R
(c) G
(d) P

Q63. The cost of painting a spherical ball at the rate of Rs. 2.50 per cm^2 is 13,860. What is the diameter of the ball? (Use $\pi = 22/7$)

(a) 40 cm
(b) 48 cm
(c) 21 cm
(d) 42 cm

Q64. In an electrical circuit, 'n' number of 10 Ohm resistors are connected in parallel. When one of the resistors is eliminated, the overall resistance of the circuit is _____.

(a) $1/(n^2)$
(b) Zero
(c) 1/n
(d) 1/(n-1)

Q65. What is the ratio of areas between two consecutive format sheet sizes created by halving the length or doubling the width?

(a) 2:1
(b) 1:4
(c) 1:2
(d) 4:1

Q66. If 'A' stands for '÷', 'B' stands for 'x', 'C' stands for '+' and 'D' stands for '-', then what will come in place of the question mark (?) in the following equation?

47 D 25 A 5C2B9=?

(a) 62
(b) 60
(c) 58
(d) 56

Q67. What is the primary purpose of netiquette in online communication?

(a) To ensure polite and respectful interactions
(b) To enhance internet connection speed
(c) To improve typing speed
(d) To increase the number of followers on social media

Q68. The thickness of a thread is measured by a student using a microscope of magnification 100. After making 30 observations, he finds the average width of the thread is 5.7 mm. What is the estimated thickness of the thread?

(a) 171 mm
(b) 0.057 mm

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(c) 0.57 mm
(d) 0.09 mm

Q69. The interest of $(10r)^2$ in r time at rate r/10 % is _____.
(a) (r^4)/10
(b) 10r^4
(c) (r^4)/20
(d) (r^4)/5

Q70. A force of 6 N is exerted on an object, resulting in its displacement of 2 m in the direction of the force. If the force is constant during the displacement, what is the work done in this case?
(a) 25 J
(b) 12 J
(c) 3 J
(d) 10 J

Q71. If 21.6: x:: x: 29.4, and x > 0 then find the value of x.
(a) 23.9
(b) 23.3
(c) 25.4
(d) 25.2

Q72. Which of the following statements is NOT true?
(a) Clinical thermometer should not be used to measure the temperature of boiling water.
(b) Clinical and laboratory thermometers are the same.
(c) The range of clinical thermometer is 35 to 42°C.
(d) Laboratory thermometer cannot be used to measure body temperature.

Q73. Which of the following options is NOT a necessary characteristic of a kite?
(a) At least one diagonal is bisected by the other diagonal.
(b) The diagonals are perpendicular to each other.
(c) The pairs of opposite angles are bisected by the corresponding diagonals.
(d) At least one pair of opposite angles is congruent.

Q74. A porter lifts a 10 kg luggage from the ground and places it on his head, 2.5 m above the ground. Calculate the work done by him on the luggage. (Take g = 10m s^(- 2))
(a) 200 J
(b) 100 J
(c) 250 J
(d) 250 N

Q75. What should come in place of the question mark (?) in the given series?
179 171 163? 147 139
(a) 155
(b) 157
(c) 151
(d) 153

Q76. If x + y + z = 0 then find the value of $(x^2)/2yz + (y^2)/2xz + (z^2)/2xy$
(a) 2/5
(b) 3/2
(c) 3/5
(d) 2/3

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Q77. In a certain code language, 'WIDE' is coded as '8694' and 'INKS' is coded as '3917', 7 What is the code for 'I' in the given code language?

(a) 8
(b) 3
(c) 7
(d) 9

Q78. A shopkeeper allows a discount of 18% on the marked price of an article and sells it for 2,870. Find the marked price of the article.

(a) Rs. 3,200
(b) Rs. 3,350
(c) Rs. 3,460
(d) Rs. 3,500

Q79. Which is the least number that must be subtracted from 5563 to make it exactly divisible by 18?

(a) 5
(b) 7
(c) 3
(d) 1

Q80. Study the given table carefully and answer the question that follows.

	Number of students who	
Appeared for the exam	Passed the exam	
Class IX	104	89
Class X	63	47

What was the total number of students who failed the exam from classes IX and X?

(a) 21
(b) 31
(c) 28
(d) 33

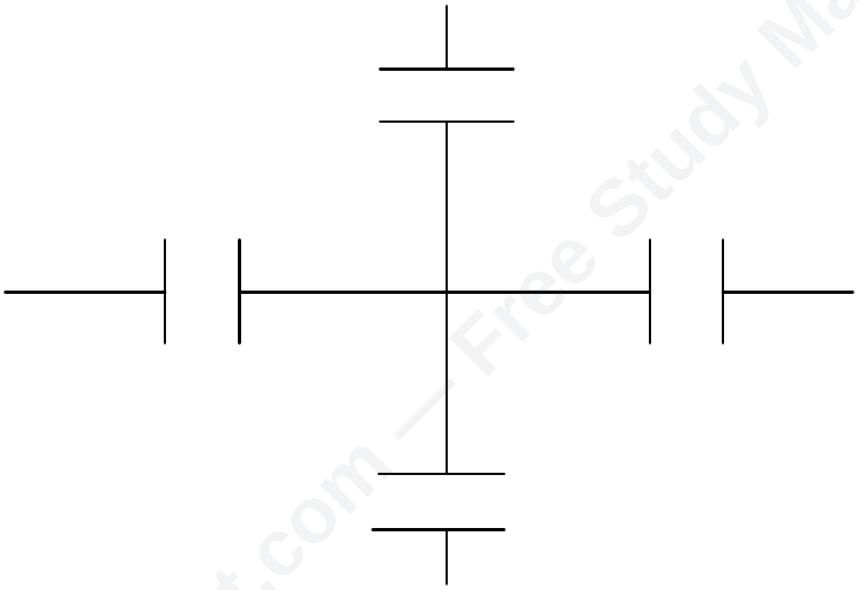
Q81. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster pair)

(a) QL-NT
(b) BW-YE
(c) KF-HM
(d) DY-AG

Q82. Identify the orthographic symbol of a pipe fitting shown in the figure.

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(a) Tee
(b) Cross
(c) Union
(d) Bend

Q83. Read the given statement and conclusions carefully. Assume that the information given in the statement is true, even if it appears to be at variance with commonly known facts, and decide which of the given conclusion(s) logically follow(s) from the statement.

Statement:

Over the past year, respiratory illnesses have increased significantly in city W. According to a public health study, this increase is linked to the increase in the number of cars, which raises air pollution levels on the roads.

Conclusions:

I. Increased vehicular traffic contributes to higher levels of air pollution.

II. Improving public transportation will reduce respiratory illnesses in city W.

(a) Both conclusions I and II follow.
(b) Neither conclusion I nor II follows.
(c) Only conclusion II follows.
(d) Only conclusion 1 follows.

Q84. An object's potential energy is equal to _____.

(a) Change in velocity
(b) Change in acceleration
(c) Transfer of energy
(d) Loss of energy

Q85. Which of the following is the primary reason for adopting scientifically designed methods for safely disposing of toxic waste from automobiles?

(a) To improve vehicle lifespan by minimising mechanical wear
(b) To increase vehicle performance by optimising engine efficiency
(c) To reduce fuel consumption and improve overall efficiency
(d) To protect human health from harmful fumes and dust in the air

Q86. Given below are two sets of numbers. Both the sets are formed using the same mathematical equations or follow a common pattern. Which of the given options follows the same set of mathematical equations or patterns as the sets given in the question?

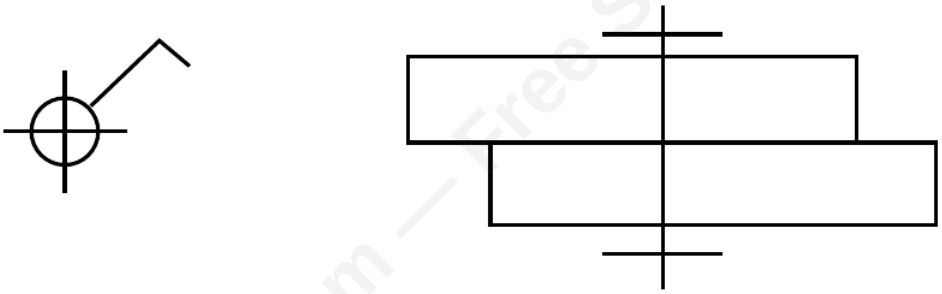
4-9-25-64-169; 16-49-121-324-841

(a) 64 - 100 - 144 - 196 - 256

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(b) 16 - 36 - 64 - 100 - 144
(c) 4 - 16 - 36 - 64 - 100
(d) 64-225-529-1444-3721

Q87. Examine the symbolic representation of the hole and rivet provided below. According to BIS SP 46-2003, what does this symbol represent?



(a) Drilled in the workshop
(b) Fitted in the workshop
(c) Drilled and fitted on-site
(d) Drilled on-site

Q88. The ABC Association meeting will be held on the 2nd Sunday of next month. The registration fee is Rs. 50 per person. Participants will be provided meals at an additional cost of Rs. 24. If the number of people who paid for meals is 100 more than those who did not pay for meals, and the total amount collected from registrations and meals is Rs. 69,400, then how many people registered and how many meals should be prepared?
(a) 1100 and 1100
(b) 1100 and 600
(c) 1100 and 50
(d) 500 and 600

Q89. What should come in place of the question mark (?) in the given series?
62 73 87 104 124 ?
(a) 142
(b) 147
(c) 134
(d) 153

Q90. What should come in place of the question mark (?) in the given alpha-numeric series?
Q16, O14, M12, K10, I8, ?
(a) G4
(b) H6
(c) G6
(d) J6

Q91. Which element is used in thermometers?
(a) Bromine
(b) Mercury
(c) Gallium
(d) Lead

Q92. Two trains are running in opposite directions at the same speed. The length of each train is 175 m. If they cross each other in 7 s, the speed of each train is:
(a) 75 km/hr
(b) 90 km/hr
(c) 85 km/hr
(d) 80 km/hr

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Q93. If the length, the breadth, and the height of a cuboid are 5 m, 2 m, and 50 cm, respectively, then find its volume.

(a) 500 m^3
(b) 20 m^3
(c) 50m^3
(d) 5 m^3

Q94. If an electric load draws a current of 2 A for 1 second, then calculate the number of electrons (with charge 1.6 × 10^(-19) °c) passing through the load.

(a) 1.25x10^(20)
(b) 0.25 x 1019
(c) 0.25 x 1020
(d) 1.25 x1019

Q95. An electric heater of resistance 50 uses a current of 3 A. Determine the heat generated in 20 seconds.

(a) 5000 J
(b) 1000 J
(c) 9000 J
(d) 60 J

Q96. Which of the following keyboard shortcuts on a Windows 10 home screen opens the item's properties?

(a) Insert + Alt
(b) F2 + Alt
(c) Tab + Del
(d) Alt + Enter

Q97. Which of the following is NOT a good heat conductor?

(a) Fur
(b) Copper
(c) Iron
(d) Aluminum

Q98. A, B, C, D, E, and F live on six different floors of the same building. The lowest floor of the building is numbered 1, the floor above it is numbered 2, and the top floor is numbered 6. E lives on an even-numbered floor but not on floor 4. The sum of the floor numbers where E and B live is 9. Only three people live between A and C. The sum of the floor numbers where F and C live is 3. What is the sum of the floor numbers where B and F live?

(a) 6
(b) 4
(c) 7
(d) 5

Q99. Under which Section of the Factories Act, of 1948, is the employment of women and children near cotton openers prohibited?

(a) Section 25
(b) Section 21
(c) Section 27
(d) Section 29

Q100. Four chairs and a table set up cost 22,000. Determine the table's cost, if it is Rs. 2,000 more expensive than the chair.

(a) Rs. 6,000
(b) Rs. 5,000
(c) Rs. 4,000
(d) Rs. 6,500

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PART B

Q101. Which of the following types of engine classifications is based on the thermodynamic cycle?

(a) V-engine
(b) In-line cylinder engine
(c) Radial engine
(d) Otto cycle engine

Q102. A voltmeter with a resistance of 10,000 ohms is connected to a circuit with a voltage of 50 V. Find the current flowing through the voltmeter.

(a) 5 mA
(b) 2 mA
(c) 1 mA
(d) 4 mA

Q103. Which of the following colours is generally used for caution signs?

(a) Yellow
(b) Red
(c) Green
(d) Blue

Q104. What happens if air is not removed from the hydraulic brake system?

(a) The engine runs more smoothly.
(b) Tires wear out faster.
(c) Fuel efficiency improves.
(d) The brakes feel spongy and less effective.

Q105. A carburetor used in a petrol engine is designed so as to fit in which of the following parts of the engine?

(a) Cylinder head
(b) Piston
(c) Casing
(d) Connecting rod

Q106. When fuel evaporates and spreads into the atmosphere, what is this emission called?

(a) Combustion emissions
(b) Crankcase emissions
(c) Exhaust emissions
(d) Evaporative emissions

Q107. Match the following types of lines with their correct description according to their orientation and characteristics.

Description

A. A line that is neither parallel nor perpendicular to the horizontal plane.
B. A line that is perpendicular to the horizontal lines.
C. A line that constantly changes its direction.
D. A line that is parallel to the horizontal plane.

1. Horizontal line
2. Vertical line
3. Oblique line (Inclined line)
4. Curved line

(a) A - 2, B - 1, C - 4, D - 3
(b) A - 2, B - 3, C - 4, D - 1
(c) A - 3, B - 2, C - 4, D - 1
(d) A - 1, B - 2, C - 3, D - 4

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Q108. What is the function of the compression spring in a 2/2-way directional control hydraulic valve?

(a) To increase the pressure at working port
(b) To move the spool to the actuated position
(c) To assist fluid flow
(d) To return spool to the normal position

Q109. When drawing a 10 mm single-stroke capital letter in vertical style, what does a distance of 10 mm between horizontal parallel lines represent?

(a) letter width
(b) Stroke thickness
(c) Interline spacing
(d) letter height

Q110. The wave set of a hexon tooth set has a gap of _____.

(a) 1.0 mm
(b) 0.8 mm
(c) 2.0 mm
(d) 0.5 mm

Q111. What is the normal temperature range of a mercury-based clinical thermometer?

(a) 0°C to 50°C
(b) 35°C to 42°C
(c) 0°C to 100°C
(d) -10°C to 110°C

Q112. Which of the following is not the purpose of lubricating oil in an engine?

(a) Dewaxing to improve low temperature fluidity.
(b) Separation of low boiling substances like gasoline, jet fuel, diesel etc.
(c) Finishing to improve oxidation and heat stability.
(d) To evenly mix impurities including aromatic and polar compounds.

Q113. Which of the following statements is correct regarding clutches used in vehicles?

(a) This allows the driver to lift and unload bulk materials from the engine and transmission.
(b) This allows the driver to change the engine's speed in any direction.
(c) This allows the driver to change the engine speed.
(d) This allows the driver to couple or decouple the power transmission as desired without stopping the engine.

Q114. Which of the following symptom or indicator does NOT show the failure of an oil pump?

(a) When the engine oil flow slows or stops, the components continue to be lubricated by hot oil that is not permitted to flow
(b) If a hydraulic lifter in a vehicle creates noise
(c) When the engine runs at a normal temperature and oil flow is steady.
(d) Able to push oil through the system adequately and with low pressure in oil lines

Q115. When passing parked vehicles, watch out for _____ that may suddenly pull out in front of the parked vehicle. When overtaking, always do so from the _____ side. Always maintain adequate _____ between your vehicle and others.

(a) Cyclist; Left; Distance
(b) Pedestrians: Right: Distance
(c) Vehicle; Right; Difference
(d) Drivers; Left: Distance

Q116. Which of the following terms in the 5S concept refers to creating a habit of maintaining established processes?

(a) Set
(b) Sort
(c) Shine

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(d) Sustain

Q117. Which type of air purifier uses oil to absorb heavy dust particles?

(a) Cyclonic-type
(b) Wet-type
(c) Electronic-type
(d) Dry-type

Q118. The SI unit of temperature is/are _____.

(a) Fahrenheit
(b) Celsius
(c) Kelvin
(d) Both Kelvin and Celsius

Q119. The camshaft is driven by the crankshaft through which of the following types of power transmission techniques?

(a) Flat belt transmission drive
(b) Epicyclic gear train drive
(c) Chain drive
(d) Timing gear drive

Q120. Which of the following statements regarding end standard is incorrect?

(a) The blades are subject to wear.
(b) It is slower but more accurate.
(c) It is used to measure the distance between two engraved lines.
(d) It measures the distance between two parallel plane surfaces.

Q121. Which of the following calipers is used for marking parallel lines on the inner and outer edges and for locating the centre of a round bar?

(a) Leg and point caliper
(b) Simple caliper
(c) Spring joint caliper
(d) Firm joint caliper

Q122. In gasoline direct injection, which type of control adjusts the air-fuel ratio in real time based on oxygen sensor data?

(a) Open-loop control
(b) Closed-loop control
(c) Feed forward control
(d) Indirect control

Q123. Which component in a multi-cylinder diesel engine directly drives the plunger-type fuel feed pump?

(a) Crankshaft
(b) F.I. pump camshaft
(c) Starter Motor
(d) Alternator

Q124. For separating metals after chain drilling, which of the following types of chisels is used?

(a) Diamond pointed chisel
(b) Web Chisel
(c) Flat chisel
(d) Cross-cut chisel

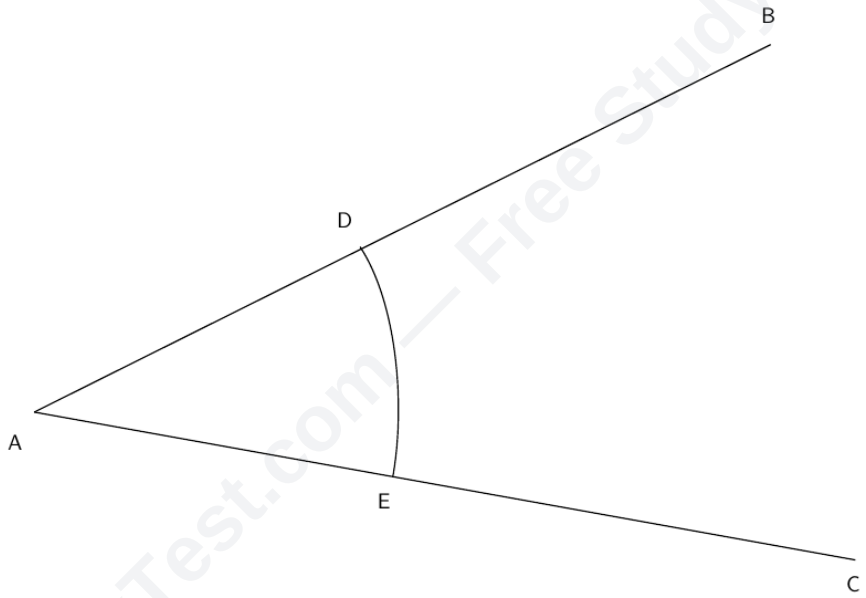
Q125. In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If both inputs A and B are at logic 0, what will be the output of the entire circuit?

(a) Undefined
(b) 0
(c) 2

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(d) 1

Q126. In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



(a) to mark equal lengths
(b) to intersect above A
(c) To find the mid-point AB
(d) to intersect the line AC

Q127. Which of the following provisions is provided in the cylinder head during design for increasing the air cooling effect?
(a) Dimple like shapes on surfaces are provided on the cylinder walls.
(b) Fins or extended surfaces are provided on the cylinder walls and cylinder blocks.
(c) Cylinder block is provided with high speed cooling air flow.
(d) Cylinder head is provided with water jackets.

Q128. Which of the following types of engine classification is based on cylinder arrangement?
(a) Diesel cycle engine
(b) V-engine
(c) Dual cycle engine
(d) Otto cycle engine

Q129. Which of the following instruments is used to insert a micrometer into the hole of the outer cylinder for zero alignment?
(a) Wrench
(b) Allen key
(c) Spanner
(d) Screw driver

Q130. Which of the following information is required to construct a rectangle?
(a) Length of only one side
(b) Length of a side and area of a rectangle
(c) Length of two adjacent sides
(d) Only the length of the diagonal

Q131. In a hydraulic brake actuator system, where is hydraulic pressure stored before it is used to assist braking?
(a) Accumulator
(b) Master cylinder
(c) Brake caliper
(d) Power steering pump

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Q132. Which of the following 'V' blocks will have a 'V' notch and two slots on either side for clamping in two positions?

(a) Single level single groove 'V' block
(b) Single level double groove 'V' block
(c) Matched pair 'V' block
(d) Double level single groove 'V' block

Q133. The turbocharger compressor housing inlet is connected to which of the following?

(a) Air cleaner
(b) Engine block
(c) Fuel injector
(d) Exhaust manifold

Q134. Convert 8.5% to a decimal.

(a) 85
(b) 8.5
(c) 0.085
(d) 0.85

Q135. Which of the following statements regarding the use of scribers is not correct?

(a) Do not carry the scriber in your pocket.
(b) Scriber tips are very sharp, so they must be handled with care.
(c) When drawing (scribing) lines, the scriber is used like a pencil.
(d) Cork the tip while using to prevent accidents.

Q136. Where is the air cleaner fitted in the engine?

(a) Next to the fuel injector
(b) At the top of the air intake manifold
(c) Inside the cylinder bore
(d) Under the engine block

Q137. What is the purpose of the heat control valve in the exhaust manifold?

(a) To direct hot gases around the inlet manifold
(b) To reduce exhaust noise
(c) To increase fuel consumption
(d) To cool the exhaust gases

Q138. Which of the following is considered an important factor in determining the quality of diesel fuel?

(a) Brand Name
(b) Colour
(c) Packaging size
(d) Cetane number

Q139. In a two-stroke engine, one power cycle is completed in how many revolutions of the crankshaft?

(a) Four revolutions
(b) Three revolutions
(c) Two revolutions
(d) A revolution

Q140. Which of the following is a cause of high oil pressure in the lubrication system of an engine?

(a) Low oil level
(b) External oil leakage
(c) Oil pump gear wear
(d) High oil viscosity

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Q141. Find the lateral surface area of a cube of side length 5 cm.

(a) 125 cm²
(b) 200 cm²
(c) 100 cm²
(d) 150 cm²

Q142. A type of piston which provides an even distribution of the air-fuel mixture, consistent flame front during combustion and it has the smallest surface area on top is known as:

(a) flat piston
(b) dome piston
(c) dish piston
(d) semi-spherical piston

Q143. What is the SI unit of 'volume'?

(a) Liters
(b) Cubic centimeter
(c) Cubic meter
(d) Milliliter

Q144. Single plate friction clutch has clutch disc between _____.

(a) Driving shaft and differential gear
(b) Differential gears and transmission gear boxes
(c) Pressure plate and driving shaft
(d) Flywheel and Pressure Plate

Q145. A vital engine component that ensures proper sealing of intake and exhaust valves is known as _____.

(a) valve gasket
(b) valve barrier
(c) valve ring
(d) valve seat

Q146. Due to burning of _____ inside the combustion chamber, particles are left behind in CI engine.

(a) Lubricating oil
(b) Hydraulic oil
(c) Petrol
(d) Coolant

Q147. Which of the following cooling media is used in heat transfer in engine cooling system?

(a) Oil
(b) Lubricant
(c) Fuel
(d) Water

Q148. For a given tire size, according to the 205/55R16 specification, what is the tire width?

(a) 880 mm
(b) 205/55 mm
(c) 550 mm
(d) 205 mm

Q149. According to Article 24 of the Indian Constitution, what is the minimum age for employment in factories or mines or other hazardous employment?

(a) 18 years
(b) 16 years
(c) 12 years
(d) 14 years

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Q150. Which of the following statement(s) is/are true regarding the title block?

Statement 1: The title block is located in the lower right corner of the drawing sheet.

Statement 2: The content of the title block is standardized and cannot be modified to suit individual company requirements.

(a) Statement 1 is true, but statement 2 is false
(b) Both statements are true
(c) Both statements are false
(d) Statement 1 is false, but statement 2 is true

Q151. For oil pumps, especially those driven by a crankshaft, the process by which the oil pump housing is first filled with oil is called _____.

(a) Ferrography of the pump
(b) Alignment of the pump
(c) Priming the New Oil Pump
(d) Pump Caution

Q152. According to the 205/55R16 specification, what is the tire width for the given tire size?

(a) 205/55 mm
(b) 550 mm
(c) 205 mm
(d) 880 mm

Q153. The emergency brake bypasses which system and locks the wheels?

(a) Electric brake system
(b) Fuel injection system
(c) Hydraulic brake system
(d) Air pressure system

Q154. What is the function of the lubricator in the FRL or Air Service Unit?

(a) Pressure regulation
(b) Combine oil spray
(c) Moisture removal
(d) Filtering particles

Q155. Who is authorized to conduct road tests on workshop vehicles?

(a) Company accountant
(b) Visitors to the workshop
(c) Only trained and certified personnel
(d) Any employee

Q156. Which of the following types of valve seats are commonly used in cast iron engine heads?

(a) Elliptical valve seats
(b) Insert valve seats
(c) Integral valve seats
(d) Two piece valve seats

Q157. In a series circuit, three resistors of 10 ohms, 20 ohms and R ohms are connected in series with a 12V battery. If the current flowing in the circuit is 0.2 A, what is the value of resistance R?

(a) 20 ohms
(b) 10 ohms
(c) 30 ohms
(d) 40 ohms

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Q158. Which of the following types of additives is mixed with lubricants to reduce the surface tension of the oil?

(a) Mist suppressors
(b) Tackiness agents
(c) Demulsifiers
(d) Emulsifier

Q159. How much clearance is required for the compression ring fitted in the piston of an IC engine?

(a) 0.002 D to 0.004 D, where D is the cylinder bore
(b) Approximately 0.9-1.80 mm for compression rings
(c) Approximately 0.095-1.80 mm for compression rings
(d) Approximately 0.035-0.080 mm for compression rings

Q160. Which of the following is not a part of the gear changing mechanism in an automatic transmission system?

(a) Torque converter
(b) Universal coupling
(c) Fluid coupling
(d) Epicyclic gear arrangement

Q161. A 100-mm prick punch with a 7-mm diameter body may have a 2.5-mm diameter point at an angle of _____ to the ground.

(a) 120°
(b) 90°
(c) 45°
(d) 30°

Q162. Which of the following metals has the lowest melting point?

(a) Gold
(b) Mercury
(c) Iron
(d) Lead

Q163. Which of the following parts is not related to the camshaft, which is responsible for opening and closing the engine valves?

(a) Connecting rod
(b) Rocker arms
(c) Push rods
(d) Tappets

Q164. What would happen if the coolant removed too much heat from the engine?

(a) The engine will overheat
(b) The cooling system will corrode
(c) Thermal efficiency will decrease
(d) Fuel consumption will increase

Q165. According to BIS SP 46-2003, which type of line is used to represent hidden edges or surfaces in a technical drawing?

(a) Chain thin line
(b) Continuous thin line
(c) Dashed thin line
(d) Continuous thick line

Q166. Which harmful emissions are converted by a catalytic converter?

(a) CH4, C2H6 and C3H8
(b) CO2, H2O and N2
(c) O2, Ar and He

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(d) HC, CO and NOx

Q167. Which of the following parts of the engine is used to compress the charge during the compression stroke and transmit the gas force to the connecting rod and then to the crankshaft during the power stroke?

(a) Cylinder head
(b) Cylinder block
(c) Piston
(d) Frankcase

Q168. Which of the following is not the correct function of the front axle?

(a) It transmits the vehicle's torque to the front wheels through springs.
(b) It absorbs the torque applied on the vehicle due to braking.
(c) It supports the weight of the front part of the vehicle.
(d) An axle is a central shaft for a rotating wheel or gear.

Q169. What is the accuracy level of metric micrometer reading?

(a) 0.5 mm
(b) 0.01 mm
(c) 1.0 mm
(d) 0.1 mm

Q170. To ensure your safety at the workplace, which of the following should be ensured?

1. All necessary protective clothing and equipment are used.
2. The necessary training and instructions for performing tasks safely have been received.

(a) Statement 1 only
(b) Only statement 2
(c) Neither statement 1 nor 2
(d) Both statements 1 and 2

Q171. Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

(a) Copper has high resistance to electricity.
(b) Copper has a low melting point.
(c) Copper has low resistance and high conductivity.
(d) Copper is available in abundance and is also cheap.

Q172. If the length of a resistor is doubled, what will be the effect on its resistance, assuming all other factors remain constant?

(a) The resistance will quadruple.
(b) The resistance will be halved.
(c) The resistance will remain constant.
(d) The resistance will double.

Q173. What causes the cam lobes to make a ticking or tapping noise in the engine, especially at idle, and is often rhythmic and varies in intensity?

(a) When the cam lobe is subjected to heavy load.
(b) When there is insufficient lubrication in the cam lobe.
(c) When the cam lobe is hot.
(d) When the cam lobe wears out.

Q174. What is the best method for manufacturing connecting rods used in engines?

(a) Machining operation
(b) Drop forging
(c) Sand casting
(d) Investment casting

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Q175. Where is a typical clutch operated by several coiled springs?

(a) On the pitch circle near the periphery
(b) On the addendum circle near the center of the radius
(c) On the interval circle near the central axis of the shaft
(d) On the base circle near the center of the circle

ANSWER KEY

1	a	2	a	3	a	4	a	5	a	6	a	7	a	8	a	9	a	10	a
11	a	12	a	13	a	14	a	15	a	16	a	17	a	18	a	19	a	20	a
21	a	22	a	23	a	24	a	25	a	26	a	27	a	28	a	29	a	30	a
31	a	32	a	33	a	34	a	35	a	36	a	37	a	38	a	39	a	40	a
41	a	42	a	43	a	44	a	45	a	46	a	47	a	48	a	49	a	50	a
51	a	52	a	53	a	54	a	55	a	56	a	57	a	58	a	59	a	60	a
61	a	62	a	63	a	64	a	65	a	66	a	67	a	68	a	69	a	70	a
71	a	72	a	73	a	74	a	75	a	76	a	77	a	78	a	79	a	80	a
81	a	82	a	83	a	84	a	85	a	86	a	87	a	88	a	89	a	90	a
91	a	92	a	93	a	94	a	95	a	96	a	97	a	98	a	99	a	100	a
101	a	102	a	103	a	104	a	105	a	106	a	107	a	108	a	109	a	110	a
111	a	112	a	113	a	114	a	115	a	116	a	117	a	118	a	119	a	120	a
121	a	122	a	123	a	124	a	125	a	126	a	127	a	128	a	129	a	130	a
131	a	132	a	133	a	134	a	135	a	136	a	137	a	138	a	139	a	140	a
141	a	142	a	143	a	144	a	145	a	146	a	147	a	148	a	149	a	150	a
151	a	152	a	153	a	154	a	155	a	156	a	157	a	158	a	159	a	160	a
161	a	162	a	163	a	164	a	165	a	166	a	167	a	168	a	169	a	170	a
171	a	172	a	173	a	174	a	175	a										

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